

A FEEDING HABIT OF SOME LOURENCO MARQUES BUTTERFLIES.

By C. W. HOWARD, Chief, Entomological Division, Department of Agriculture for the Province de Moçambique.

DURING the month of April last my attention was called to the loss of the crop of apples on a few trees near Lourenco Marques. On investigation I found that not only the apples, but also some quinces near by, were rendered entirely unfit for use owing to the depredations of a small butterfly, *Crenis boisduvali* (Wallengren). The trees were growing in a low valley surrounded by and close to a considerable bush, exactly the situation which they prefer, and the apple trees were literally covered with butterflies. So intent were they upon their work that it was very easy to watch them force their probosces through the skin of the apple, suck up the juice, withdraw the proboscis partway, and insert it at a new angle. This process was repeated until a large area was exhausted of juice. On cutting open the apple or quince nothing but fibres were found in the area beneath the puncture. Exteriorly only a small puncture could be seen on what was apparently a perfectly sound fruit. Soon, however, discoloration commenced and decay began to set in, which spread rapidly, causing the apple to drop to the ground. When the butterflies began to attack the apples they were approaching the ripening stage, but were still hard and firm. The quinces were very hard and still green. After the fruit had fallen the butterflies continued their feast upon the decaying mass.

About a month later my attention was called to another case of fruit being destroyed by butterflies. This time it was oranges and naartjes which were attacked by butterflies of the species *Charaxes neanthes* (Hewitson) and *Charaxes zoölina* (Westwood). In this case the oranges were still green, only a few beginning to turn yellow, and were of a very thick skinned variety. For some time only the punctures appeared on the exterior of the oranges, but after a few days a circular area about them became yellow and finally decay set in, and eventually the oranges dropped from the trees. A section through the part punctured showed a mass of fibres with all the juice extracted. Hundreds of butterflies were present; indeed, they were so numerous that often seven or eight were clinging to each orange, and the ground beneath the trees was thickly strewn with decaying oranges.

A search through the scanty literature at my disposal reveals very few notes on the feeding habits of these three butterflies. As regards *Crenis boisduvali*, I find no records of food habits, but as regards the *Charaxes* I find a note by Trimen in "South African Butterflies," vol. 1, p. 315, to the effect that they are fond of the sap which exudes from the wounds in trees, the moisture in damp earth, droppings of animals, and even decomposing carcasses. On page 320 he also states that *C. zoölina* frequents the flowers of a yellow-flowered thistle in Kaffraria. Mr. Swierstra, of the Transvaal Museum, to whom I am indebted for identifying specimens forwarded to him,

informs me that these butterflies will feed on decaying fruit as well as decaying animal matter. This fact I also noticed when examining the oranges. The peculiar thing seems to be that a butterfly will enjoy the sharp, acid juice of an unripe orange or lemon, yet it can be a no more erratic taste than that for the juice from a decaying carcass.

Entomological writings mention three other Lepidoptera in South Africa which have a similar habit of puncturing fruit, but curiously enough these are all moths. In the Transvaal a few years ago rather a serious epidemic occurred of *Ophiusa catella*, which brought ruin to the crops of peaches, plums, and grapes in many districts. In Cape Colony *Sphingomorpha chlorea* and *Ophiusa lienardi* have a similar habit. These moths attack the fruit at night or on cloudy days, while the butterflies work only on the brightest days. Furthermore, the moths are very stout bodied and possess strong, sharp probosces, quite capable of puncturing even a hard, green fruit.

These three examples will serve to throw discredit upon our old theory that the Lepidoptera are, as a rule, destructive only in the larval stage.

A NOTE ON THE COPULATION OF TICKS.

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DURING the past summer, while stopping at Mopea Sugar Estate on the Zambesi River, I spent a half day collecting in the forest, along a road frequented by cattle from the estate. Among other specimens collected was an unengorged female *Rhipicephalus* clinging to a leaf of a thorn tree (*Acacia* sp.) Apparently I had only one tick, but when I began to look more closely I found a mature male clinging firmly to the underside of the female, in copulation.

Upon examining these ticks more carefully I found that they were specimens of *Rhipicephalus ecinctus* Neumann.

Very few observations have been made upon the copulation of *Rhipicephalus*. Hooker (1908) states that the brown dog tick of America (*Rhipicephalus texanus*) moults upon the host, and as soon as the male is free from the nymphal skin he goes in search of the female and remains clinging to her until she drops from the host fully engorged. Lounsbury records that the brown tick of South Africa, *Rhipicephalus appendiculatus*, copulates on the host after a short feed; the female engorging to repletion, however, only after copulation.

These references seem to indicate that the species of *Rhipicephalus* copulate only on the host during the period of parasitism, and I am unable to find any reference in literature to any species of *Rhipicephalus* copulating before the period of parasitism. My observation on *Rhipicephalus ecinctus*, then, becomes of special interest.